

Notice of Allowability

Application No.

09/591,279

Examiner

David J Steadman

Applicant(s)

DEHESH ET AL.

Art Unit

1652

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to amendment filed January 09, 2004.
2. ☒ The allowed claim(s) is/are 4-7 and 29-78.
3. ☐ The drawings filed on _____ are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

DETAILED ACTION

Status of the Application

- [1] Claims 4-7 and 29-78 are pending in the application.
- [2] Applicants' amendment to the claims, filed January 09, 2004, is acknowledged. This listing of the claims replaces all previous listings and versions of the claims. It is noted that applicants state in the amendment that claim 28 is currently pending (see page 12, line 2). However, the instant amendment clearly indicates this claim is canceled.
- [3] Applicants' arguments in the amendment filed January 09, 2004 have been fully considered and are deemed to be persuasive to overcome the rejections previously applied.

Examiner's Amendment

- [4] An extension of time under 37 CFR 1.136(a) is required in order to make an examiner's amendment which places this application in condition for allowance. During a telephone conversation conducted on February 04, 2004, Ms. Kristan L. Lansbery requested an extension of time for 1 MONTH(S) and authorized the Director to charge Deposit Account No. 50-2387 the required fee of \$ 110.00 for this extension and authorized the following examiner's amendment.
- [5] Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

[6] In claim 30, replace “preferentially-accumulates” in line 7 with “preferentially accumulates”.

[7] In claim 58, replace “chained” in line 2 with “chain”.

[8] In claims 66-78, delete “selected from the group consisting of”.

Reasons for Allowance

[9] The following is an Examiner’s statement of reasons for allowance. Edwards et al. (IDS reference AO; *FEBS Lett* 402:62-6) teach cloning of the *fabF* gene encoding *E. coli* KAS II (as represented by SEQ ID NO:47) and suggest that cloning of the gene encoding *E. coli* KAS II “provides a ready means to assess the effect of specific mutations in the KAS genes on their enzymatic activities” (page 66, right column, bottom). Also, Huang et al. (IDS reference; *EMBO J* 17:1183-91) and Moche et al. (IDS reference AL; *J Biol Chem* 274:6031-6034) teach crystal structures of native or ligand-complexed *E. coli* KAS II, respectively, and indicate specific residues that are involved in catalysis and ligand binding. In view of these teachings, one of ordinary skill in the art would be motivated and would have had a reasonable expectation of success to alter those residues identified by Huang et al. and Moche et al. to assess the effect of mutation(s) at these residues on the enzymatic activity of *E. coli* KAS II as suggested by Edwards et al. However, the examiner has found no teaching or suggestion in the prior art directed to an engineered beta-ketoacyl-acyl carrier protein synthase protein having substitution of the residues corresponding to amino acids of SEQ ID NO:47 as set forth in the claims with an expectation that the engineered protein would have the specific

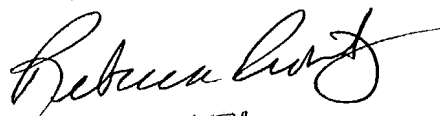
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effect of increasing long chain fatty acid accumulation (see e.g., claim 4), increasing accumulation of shorter chain length fatty acids (see, e.g., claim 30), or widening the hydrophobic fatty acid binding pocket resulting in alteration of substrate preference (see, e.g., claim 53). Therefore, claims 4-7 and 29-78, directed to an engineered beta-ketoacyl-acyl carrier protein synthase protein having substitution of the residues corresponding to amino acids of SEQ ID NO:47 as set forth in the claims that has the specific effect of increasing long chain fatty acid accumulation, increasing accumulation of shorter chain length fatty acids, or widening the hydrophobic fatty acid binding pocket resulting in alteration of substrate preference are allowable over the prior art of record.

[10] Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David Steadman, whose telephone number is (571) 272-0942. The Examiner can normally be reached Monday-Friday from 7:30 am to 4:00 pm. If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Ponnathapura Achutamurthy, can be reached at (571) 272-0928. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Art Unit receptionist whose telephone number is (703) 308-0196.

David J. Steadman, Ph.D.
Patent Examiner
Art Unit 1652


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